TENSACCIAI

POST-TENSIONING SYSTEM
FOR
SLABS

Monostrand system

PTS system

DTS-PT-GEN-0009 (DTS-0023)
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Technical Department
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System main features

The advantages of the technique of slab post-tensioning are several and clear.

If we take as an example a car parking, we can see that, in the case of simply reinforced concrete slab, the structure is made of a forest of pillars, with floor thickness considerably high. In the case of post-tensioned slabs, structure is spacious and free, facilitating traffic movements and parking. Floor thickness is also considerably reduced (up to 1,8 times, i.e. from 40 up to 25 cm) introducing a saving of weight, while spans reach 15 meters instead of common 7 / 8 meters.

Slab post-tensioning enables deflections and cracks under service conditions to be kept under control.

This is why, in fact, post-tensioning increases the concrete durability, due to the presence of concrete always under compression stresses.

The structural simplification, giving also an increase of free space, leads to an overall reduction of costs for buildings.

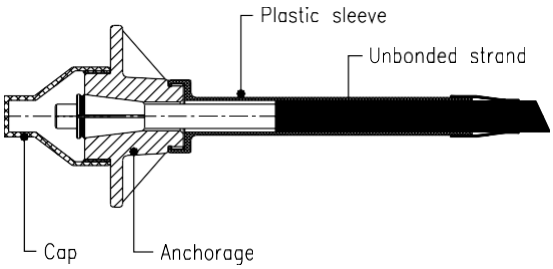
This also comes from the reduction of steel placed inside slab and time needed for construction.

Even installation equipment can be less, due to reduction of formworks through the application of fast cycling after stressing.

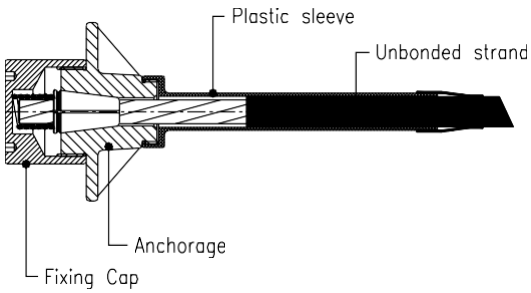
The following table summarises the main advantages of slab post-tensioning.

	First direct advantage	Related further advantages
DESIGN	Reduction in slab thickness	• Floor to floor distance reduction • Savings on total building height (1 floor gained each 20 foreseen) • Reduction of construction volumes and consequent energy needed for heating, cooling living spaces • Different opportunities for ceiling final finishing.
	Larger spans (and reduction of columns)	• Increase of free space available • More architectural opportunities
	Reduction in slab weight	• Savings on vertical structural bearing members and foundations.
	High limitation of crack widths	• Improvement of durability and concrete behavior.
	High deflection limitation	• Improvement of serviceability for all structural members
CONSTRUCTION	Reduction of steel reinforcement and arrangement simplification	• Easier materials placing and handling.
	High deflection limitations due to concrete shrinkage and creep	• Possible earlier formworks removal.
	High repeatability from floor to floor / quick rotation of formworks	• Reduction of erection times • Reduction of formworks sets • Improvement of constructability

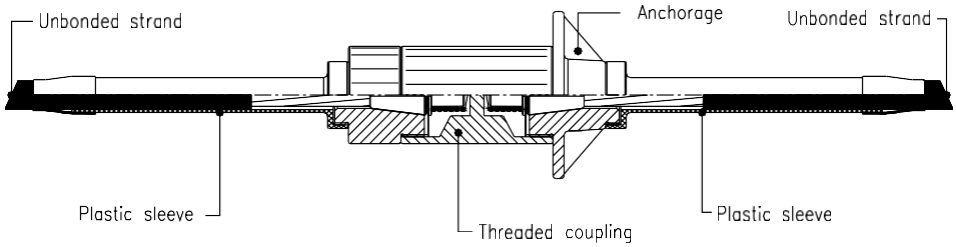
Mono-strand System



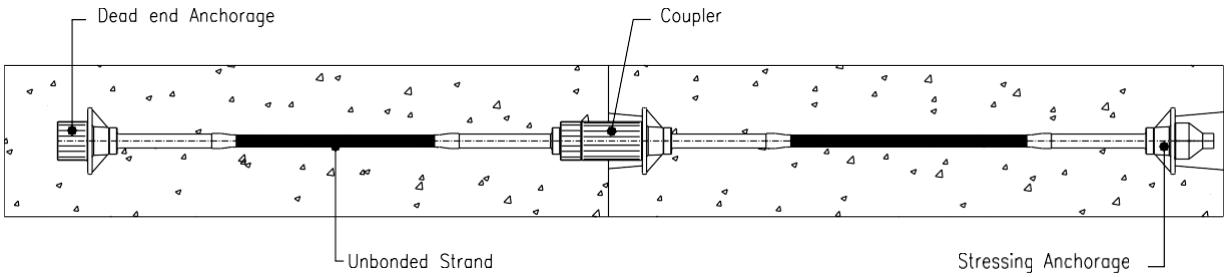
Live end



Dead end



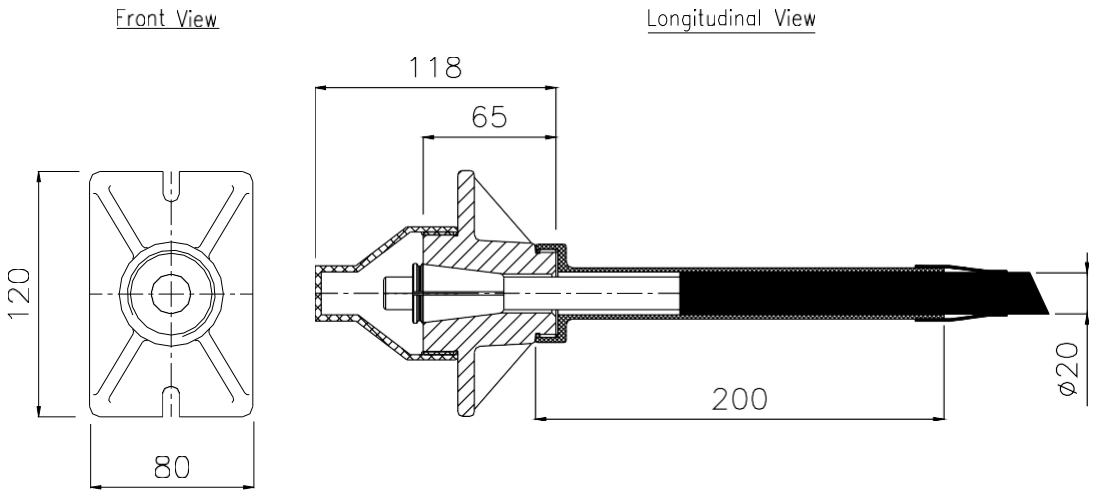
Coupler



Typical application

TENSACCIAI	**Monostrand post-tensioning system General overview**	

Mono-strand System



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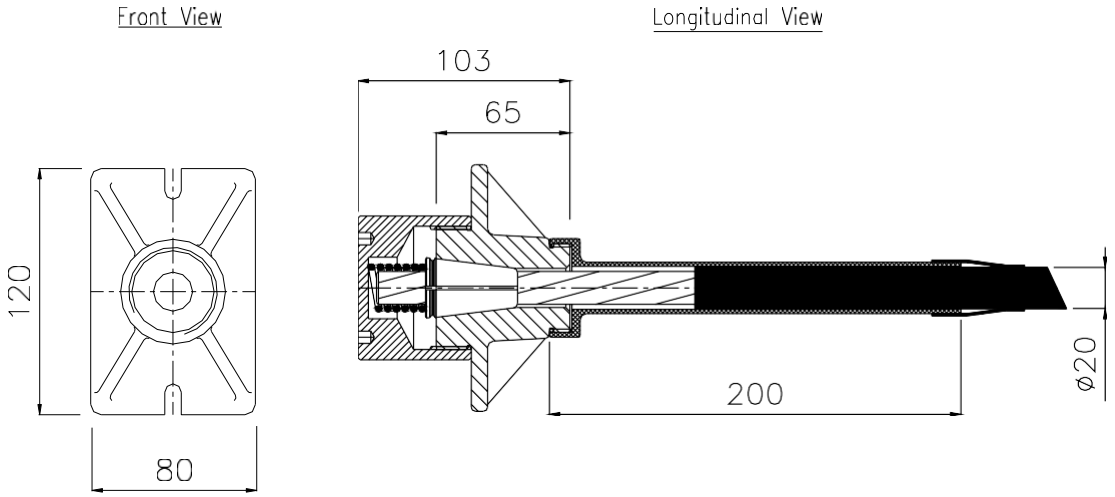
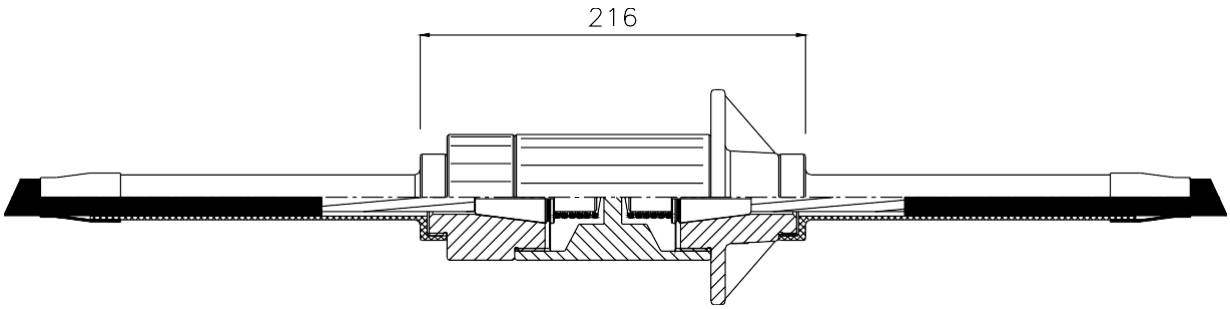


Dead end

TENSACCIAI	**Mono-strand post-tensioning system Main dimensions - 1**	

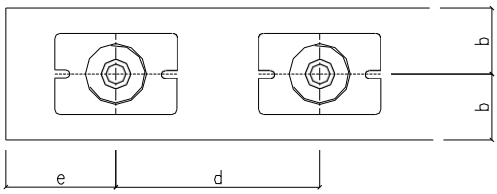
Mono-strand System

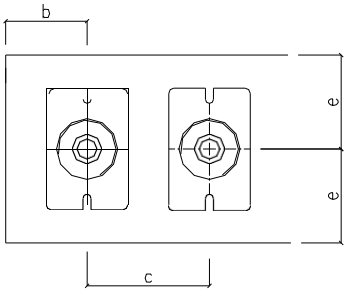


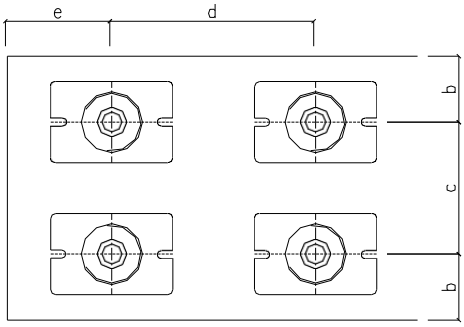
Coupler

TENSACCIAI	**Mono-strand post-tensioning system** **Main dimensions - 2**	

Mono-strand System

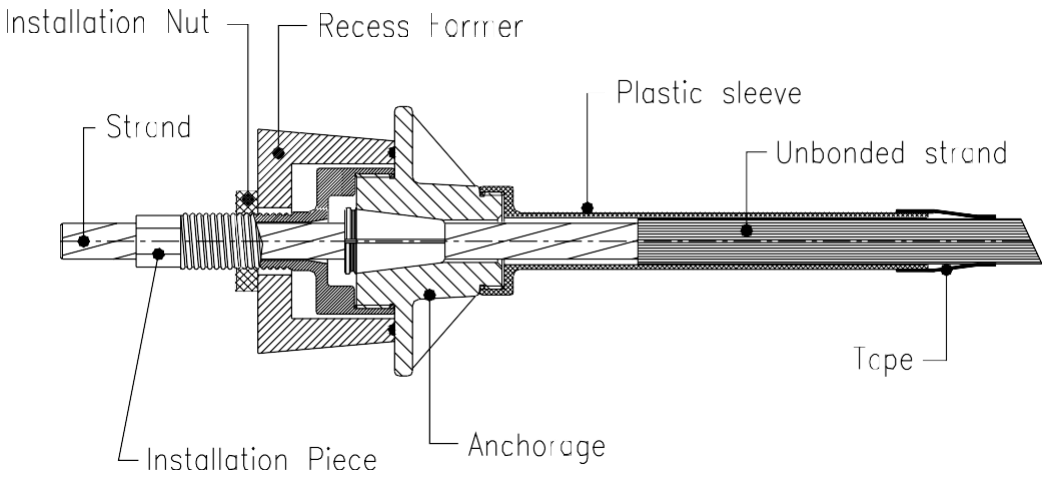






Concrete strength at the time of stressing	b	c	d	e
	all dimensions in mm			
$f_{cm,0\text{ - cyl}}$ = 25 MPa	75	140	220	110
$f_{cm,0\text{ - cyl}}$ = 33 MPa	65	120	200	100
$f_{cm,0\text{ - cyl}}$ = 45 MPa	55	100	160	80

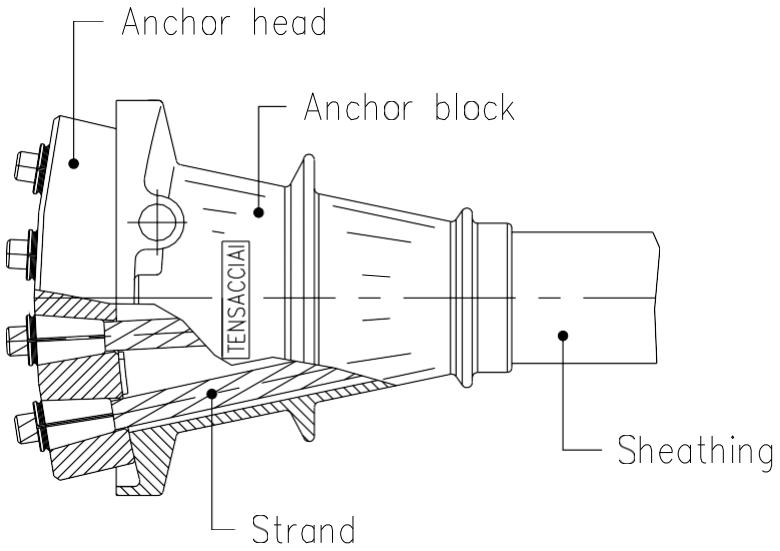
Mono-strand System



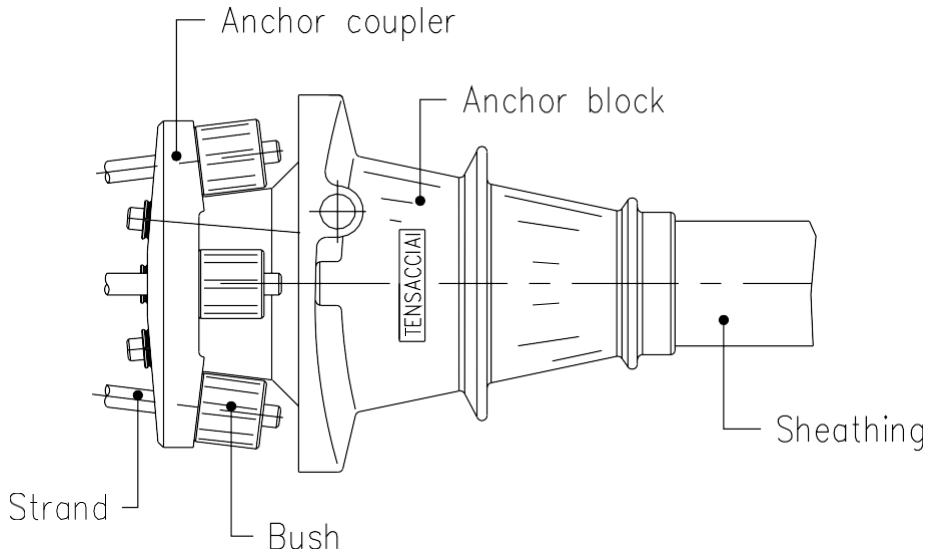
Recess former system for mono-strand anchorage

TENSACCIAI	**Mono-strand post-tensioning system Installation details**	

PTS multi-strand system



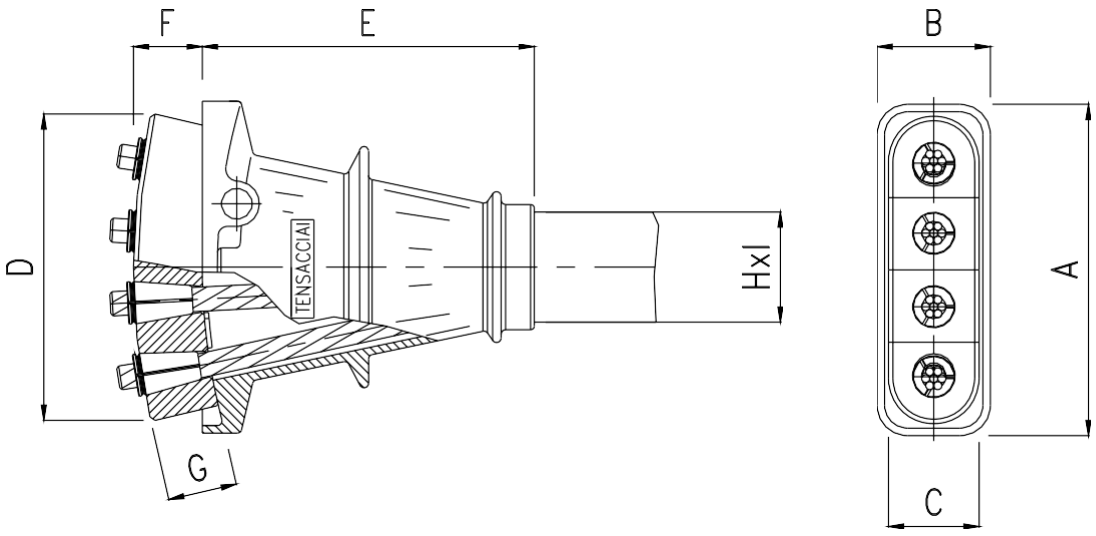
Anchorage



Coupler

TENSACCIAI	**PTS multi-strand system** **General overview**	

PTS multi-strand system



	A	B	C	D	E	F	G	H	I
PTS type	all dimensions in mm								
3 PTS 13 (3 strands Ø 12,7 mm)	170	75	50	125	190	45	45	72	20
3 PTS 15 (3 strands Ø 15,2 mm)	170	75	60	155	190	45	45	72	20
4 PTS 13 (4 strands Ø 12,7 mm)	220	75	50	160	220	45	45	72	20
4 PTS 15 (4 strands Ø 15,2 mm)	220	75	60	205	220	45	45	72	20
5 PTS 13 (5 strands Ø 12,7 mm)	220	75	50	200	220	45	45	72	20
5 PTS 15 (5 strands Ø 15,2 mm)	265	75	60	250	270	45	45	92	22

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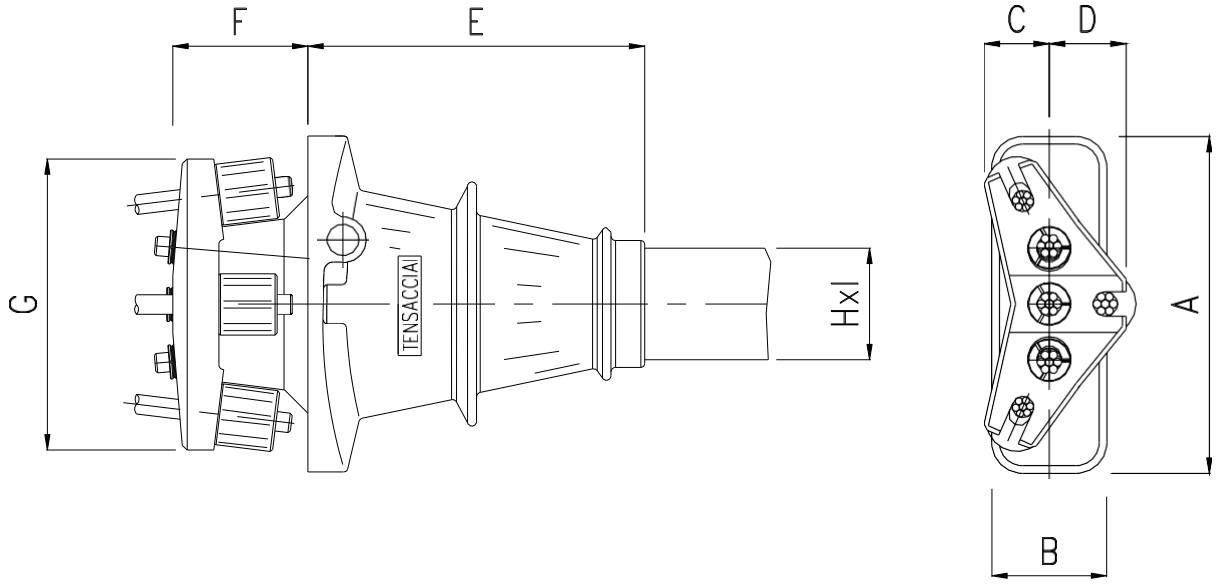
PTS multi-strand system
Main dimensions - 1

PTS multi-strand system



	A	B	C	D	E	F	G	H	I
PTS type	all dimensions in mm								
3 PTS 13 (3 strands Ø 12,7 mm)	170	75	44	50	190	88	190	72	20
3 PTS 15 (3 strands Ø 15,2 mm)	170	75	44	62	190	104	220	72	20
4 PTS 13 (4 strands Ø 12,7 mm)	220	75	50	50	220	88	160	72	20
4 PTS 15 (4 strands Ø 15,2 mm)	220	75	53	53	220	103	250	72	20
5 PTS 13 (5 strands Ø 12,7 mm)	220	75	50	50	220	88	242	72	20
5 PTS 15 (5 strands Ø 15,2 mm)	265	75	53	53	270	104	295	92	22

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PTS multi-strand system
Main dimensions - 2